WHAT IS CLAIMED IS:

1 1. An add multiplexer having an input port and an output port, comprising: 2 3 an optical circulator comprising a first port, a second port, and a third port. 4 said first port of said optical circulator coupled to the input port of the add 5 multiplexer; 6 7 an optical monitor mechanism coupled to said third port of said optical 8 circulator, 9 a wavelength add mechanism coupled to said second port of said optical 10 circulator; and 11 12 said wavelength add mechanism being coupled to the output port of the 13 add multiplexer. 1 2. An add multiplexer of claim 1, wherein said optical monitor measures 2 optical power at said third port of said optical circulator. 1 3. An add multiplexer of claim 1, wherein said optical monitor measures the 2 wavelength of light at said third port of said optical circulator.

- 1 4. An add multiplexer of claim 1, wherein said optical monitor measures both
- 2 the optical power versus wavelength.
- 1 5. The add multiplexer of claim 1, wherein said optical monitor mechanism is
- 2 coupled to said third port of said optical circulator and to said wavelength add
- 3 mechanism, thereby providing a feedback path.

1	6.	The add multiplexer of claim 1, further comprising a tunable source coupled			
2	to said wavelength add mechanism, said optical monitor mechanism is coupled to				
3	said third port of said optical circulator and to said tunable source, thereby				
4	provi	ding a feedback path.			
1	7.	The add multiplexer of claim 1, wherein a drop mechanism is coupled in			
2		between said input port of the add multiplexer and said first port of said			
3		optical circulator.			
1	8.	An optical device for adding signals to an optical system having an input			
2		port and an output port, comprising:			
3					
4		a first optical circulator comprising a first port, a second port and a third			
5		port, said first port of said first optical circulator coupled to said input port;			
6					
7		an optical monitor device coupled to said third port of said first optical			
8	circul	ator;			
9					
10		a filter coupled to said second port of said first optical circulator;			
11					
12		a second optical circulator comprising a first port, a second port and a third			
13	port,	said second port of said second optical circulator coupled to said filter;			
14					
15		an add port coupled to said first port of said second optical circulator; and			
16					
17		said third port of said second optical circulator being coupled to an output			
18	port.				

1	9	The optical device of claim 8, further comprising a feedback path from said
2	optica	l monitor device to said filter.

1 10. The optical device of claim 8, wherein said filter is tunable.

1 11. An add/drop multiplexer having an input port and an output port,2 comprising:

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4 a wavelength drop mechanism coupled to said input port;

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a wavelength add mechanism;

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an optical circulator comprising a first port, a second port, and a third port, said first port of said optical circulator coupled to said wavelength drop mechanism and said second port of said optical circulator coupled to said wavelength add mechanism; and

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said wavelength add mechanism being coupled to an output.

- 1 12. The add/drop multiplexer of claim 11, further comprising an optical monitor
- 2 mechanism coupled between said optical circulator and said wavelength add
- 3 mechanism, providing a feedback path to said wavelength add mechanism.
 - 13. An add/drop multiplexer comprising:

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- 3 an input port;
- a first optical circulator comprising a first port, a second port and a third port, said first port coupled to said input port;

6 7 a first filter coupled to said second port of said first optical circulator; 8 9 a drop port coupled to said third port of said optical circulator; 10 11 a second optical circulator having a first port, a second port and a third port, 12 said first port of said second optical circulator coupled to said first filter; 13 14 a second filter coupled to said second port of said second optical circulator; 15 16 a third optical circulator having a first port, a second port and a third port, 17 said second port of said third optical circulator coupled to said second filter; 18 19 an add port coupled to said first port of said third optical circulator; and 20 21 an output port coupled to said third port of said third optical circulator. 1 14. The add/drop multiplexer of claim 13 wherein said said second filter is 2 tunable.

- 1 15. The add/drop multiplexer of claim 13, further comprising a feedback loop
- 2 from said third port of said second circulator to said second filter.
- 1 16. The add/drop multiplexer of claim 13, further comprising a tunable laser
- 2 coupled to said add port.

1	17.	The add/drop multiplexer of claim 16 further comprising a feedback loop			
2	from said third port of second circulator to said tunable laser, wherein said				
3	feedb	ack loop controls the output wavelength of said tunable laser.			
1	18.	A method for controlling light propagation in an optical transmission			
2	syste	m, comprising:			
3					
4		adding an optical signal to said optical transmission system using an optical			
5	add mechanism; and				
6					
7		detecting light propagation from said optical add mechanism using an			
8	optical circulator.				
1	19.	The method of claim 18, further comprising feeding back information			
2	relate	d to the detected light propagation from said optical circulator to a tunable			
3		al device.			
1	20.	A method for adding an optical signal to an optical transmission system,			
2	comprising:				
3					
4		adding a first optical signal in a wavelength channel to said optical			
5	transr	nission system;			
6					
7		detecting wavelength propagation responsive to adding said first optical			
8	signal	using an optical circulator; and			
9	J				
10		tuning a tunable optical device in response to detecting said wavelength			

propagation.

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1 2	21. The method of claim 20, wherein said tunable optical device is a tunal filter.	ole
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1	22. The method of claim 20, wherein said tunable optical device is a tunal	ble
2	laser.	
1	23. The method of claim 20, further comprising the step of feeding back	
2	information related to the detected light propagation from said optical circulate	or to
3	said tunable optical device.	
1	24. A method for dropping an optical signal from and adding an optical signal	nal to
2	an optical transmission system, comprising:	
3		
4	receiving optical signals including a first optical signal within a first	
5	wavelength channel;	
6		
7	dropping said first optical signal within a first wavelength channel out	of
8	said optical transmission system using a first tunable optical device;	
9 10	adding a second entired signal within a second wavelength, shown at the	لد: د د
11	adding a second optical signal within a second wavelength channel to optical transmission system using a second tunable optical device;	said
12	optical transmission system using a second tunable optical device,	
13	detecting wavelength propagation responsive to adding said second o	ntical
14	signal using an optical circulator; and	pticai
15		
16	tuning said second tunable optical device in response to detecting sai	d
17	wavelength propagation.	

- 1 25. The method of claim 24, wherein said detecting step further includes
- 2 detecting wavelength propagation using a feedback path from said optical
- 3 circulator to said second tunable optical device.
- 1 26. The method of claim 24, wherein said first optical signal and said second
- 2 optical signal are the same wavelength.